INADCO's

Densimeter



Installing and Adjusting

Translation from original user-manual

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Text printed Bold and in Italics, refer to functions on the Operator Panel.
Bold printed words refer to names used in drawings Appendix A and B.

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Warning

Starting Up

CAUTION: DANGER!!!!!!!!!!!
The Densimeter is a fully automated machine.
Because the machine is started remotely, it can be very dangerous for men and machine to do checking on the machine
Always switch off the mains switch of the Mode Cabinet or the safety switch near the motor, when working on, or checking the machine.

Whenever the mains voltage disappears, or a glitch in the voltage occurs, the machine will always return in AUTO-mode.
It will start instantaneously, if the status of the start signal is high.
In most cases, data of already finished measurements will be lost. If a sticker has to be printed, the printout will not show the correct data.

Welding

The weighing-signal and position-signal of the Densimeter are very sensitive. When any welding is necessary nearby the Densimeter it is important to place the ground-clamp nearby the place that needs to be welded.
It is **not allowed** to do any welding on the Densimeter.
When these precautions are not taken, the Densimeter can be damaged.

Mechanical overload

When the weighing-section of the Densimeter is overloaded by a long time, or severely overloaded a short time (impact) then the loadcell of the Densimeter will be destroyed.
In normal use the Densimeter can be loaded until 40kg.
The weighing-section are the black cylinder, the bottom and the arm to open the bottom.

Cable route

When routing the cables, there must be taken some precautions with the sensitive cables.
These cables need to be placed at least 20 cm away from “noise generating” power cables or eventually placed in a steel housing.

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Densimeter mounting configurations

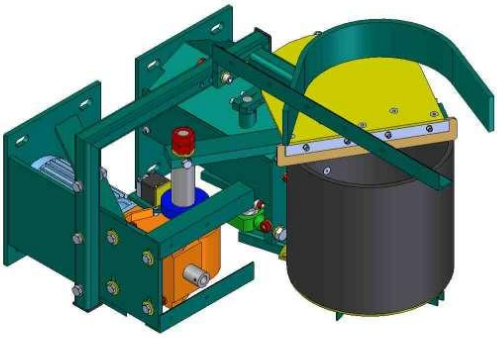
De INADCO Densimeter is designed in such a way, that in can be mounted in almost every situation that can occur.

There are four possible configurations for mounting the Densimeter.

Situation 1

In this method the Cylinder is mounted on the right hand side of the Motor, both mounting bases, **Mountingbase Cylinder** en **Mountingbase Motor** are placed on equal level.

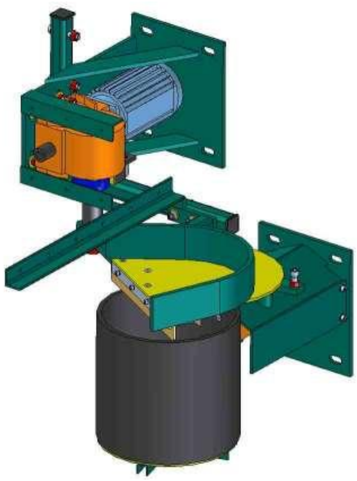
The backsides of both mounting-bases have to be in the same plane, and the top of them at exact equal height.



Situation 2

In this method the **Cylinder** is mounted on the right hand side of the Motor. **Mountingbase Motor** is placed upside down, with its lower side exactly 100mm above the upper level of **Mountingbase Cylinder**.

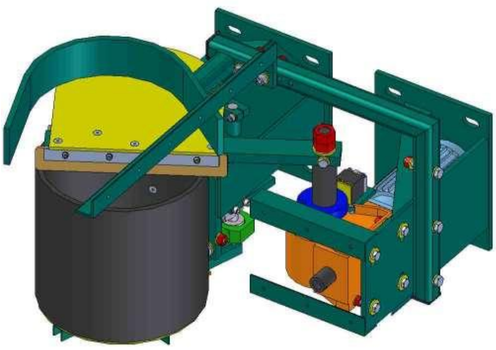
The backsides of both mounting bases have to be in the same plane, and the top of them at exact equal height.



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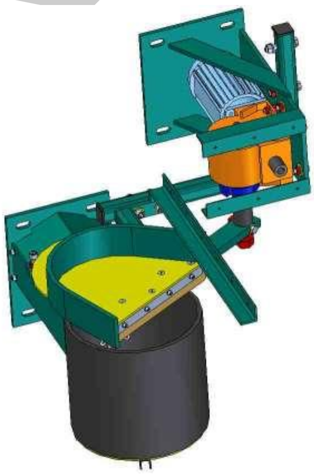
Situation 3

This method is almost equal to Mounting Situation 1. Only the **Cylinder** and the **Motor** are both mirrored.



Situation 4

This method is almost equal to Mounting Situation 2. Only the **Cylinder** is now placed on the left side of the **Motor** instead of the right side, so they are both mirrored.



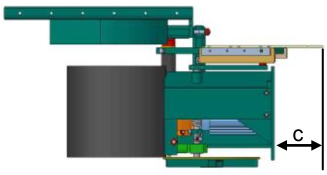
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Mounting of the Densimeter

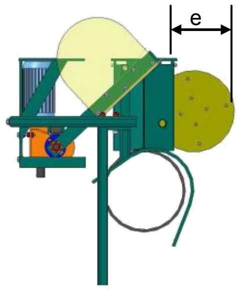
As described above there are 4 ways of mounting the Densimeter.
But not only the relationship between the **Mountingbase Cylinder** and **Mountingbase Motor** is important, there are some other relations to keep in mind. These relations will be described down below.
One thing you must always keep in mind is that the Densimeter is mounted leveled.

Densimeter in Emptying position

When the Densimeter is emptied, the **Shovel** will rotate across the **Mountingbase Cylinder**. Hence the space above this **Mountingbase Cylinder** has to stay free. No parts of the supporting construction are allowed to be there!! The minimum free distance (c) has to be 180 mm. Also space aside the **Cylinder**, at least 240 mm (e) is needed to open the **Bottom** (see drawings).



Note: Be sure that when making shields for safety or dust, the **Bottom** can still be opened completely, so that it can even touch the Mountingbase **Cylinder** when (more than normally necessary) completely opened.

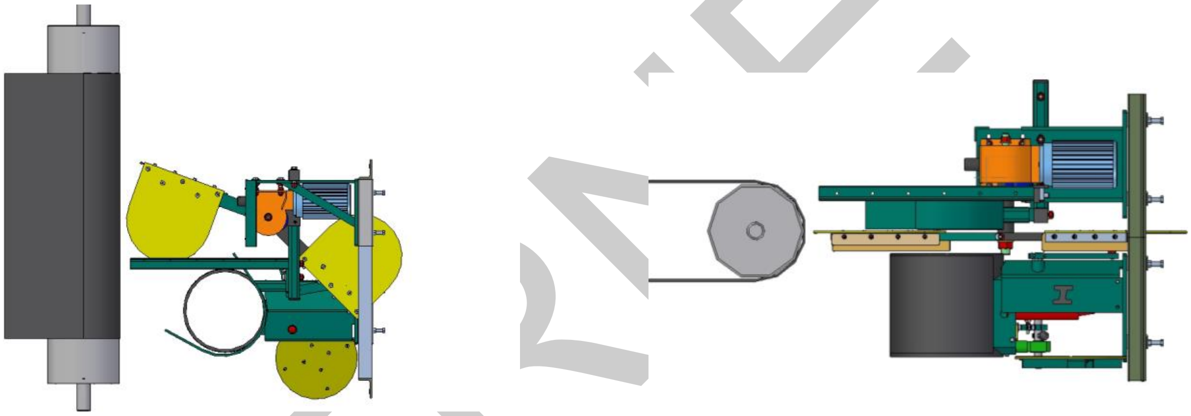


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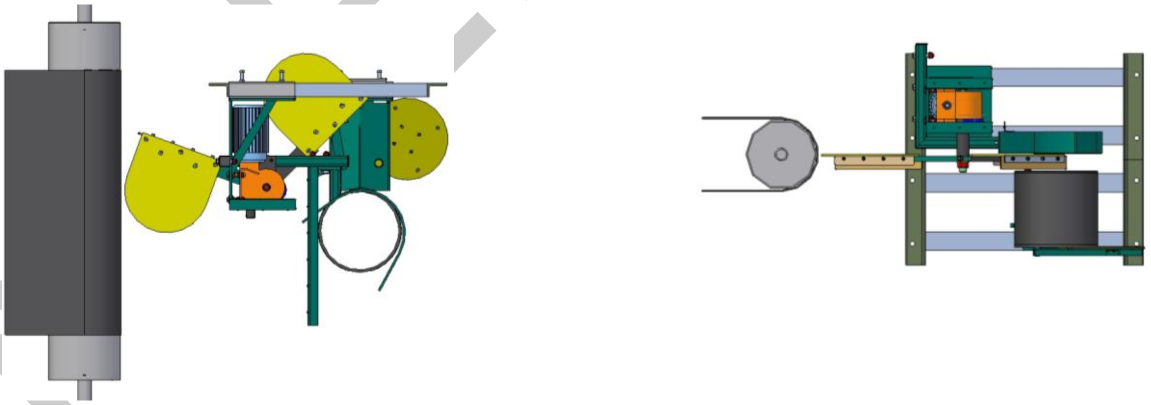
Distance to Conveyor Belt

There are two ways of mounting the Densimeter near a belt. You can mount the Densimeter in line with the belt or in corner overflow. In both cases it's important that the **Shovel** is leveled with the centerline of the belts drum (see pictures below) and that the **Shovel** can rotate through the product. For measures see: appendix G: Installation

Overflow in corner



Overflow in line



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Mechanical Adjustments

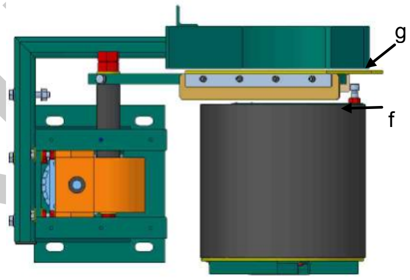
Now that the Densimeter is mounted on the right place and leveled we can adjust the Densimeter.

Motor

Adjustment of the Shovel

Place the **Shovel** in line with the motor by using the **Manual Motor-Axle**.
Use the mounting-bolts of the motor for leveling the **Shovel** in this situation.

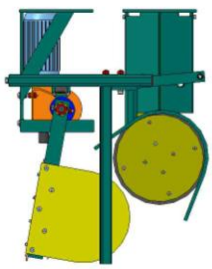
When done use the **Manual Motor-Axle** to place the **Shovel** square on the motor axle.
Now use again the mounting-bolts of the motor for leveling the **Shovel** in this situation.



At last place the **Shovel** above the **Cylinder** and keep a gap of approx. 5mm (f) between the **Cylinder** and the **After scraper**.

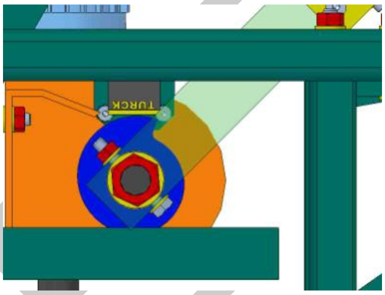
Adjustment of the Prescraper

When the **Shovel** is adjusted correctly we can adjust the **Prescraper**.
Place the **Prescraper** so that there is a gap of approx. 5mm (g) between the **Shovel** and the **Prescraper** and that the **Prescraper** is leveled.



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Adjustment of the Position Sensor



The **Disk** must be placed so that when turning the **Shovel** inner hexagonal the direction of **Mountingbase Cylinder** the distance between the **Disk** and the **Sensor** will be reduced.

Loosen the 2 bolts in the **Disk** and turn the **Disk** so that the thickest site of the **Disk** is in the same position as the picture.
Tighten the 2 bolts in the **Disk** and place the **Sensor** so that there is a gap of 1mm between the **Disk** and the **Sensor**.

Adjustment of the Position Disk

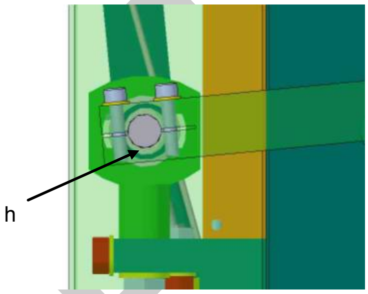
When the **Shovel** is in the ultimate position (the bottom touches the **Mounting base Motor**), the **Disk** must manually be rotated so that on the Operator Panel on Pic 10 at **Actual Pos Arm** shows a value close to 3500. This equals the voltage of 1.45 V measured between terminal 2 and 3 in the control cabinet.
Now the **Disk** can be fixed in place with the 2 inner hexagonal bolts in the **Disk**.
The centerline of the **Disk** is on the same level as the centerline of the **Sensor**.

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Cylinder

Adjustment of the Axle Bottom

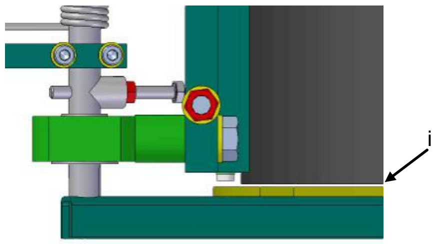
To get reliable and correct measurements it's important that the **Axle Bottom** will be centered in the **Chimney** of the **Roof** (h).
You can accomplice this by using the oversized 9mm holes used for mounting the **Load cell**.
The holes for mounting the **Roof** (4xM8 mm) may not be made larger.



Adjustment of the Bottom

The gap between the **Bottom** and **Cylinder** is approximately 2mm (i).

To make sure that the **Cylinder** is closed totally by the **Bottom** adjust the **Striking bolt**, while the **Bottom** closes the **Cylinder** completely, until the head off the **Striking bolt** touches the rubber cushion mounted on the **Block Bearing**.
When the **Bottom** isn't equal with the **Cylinder** use the 2 M12 mounting bolts, used for mounting the **Block Bearing** on the **Block Cylinder**, for adjustment.

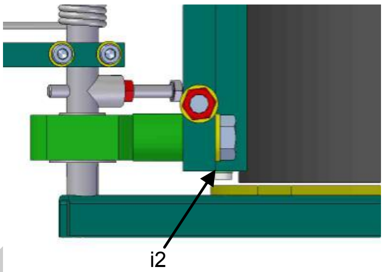


To make sure that the **Bottom** will close nice and easy you must pre-tension the **Spring** with the **Arm Spring**. In general this means that the **Arm Spring** will be fixed parallel to the **Mounting base Cylinder**.

Note: When the **Arm Spring** is mounted too high it will bounce against the **Roof** when the **Bottom** will be opened. In that case the **Bottom** can't be opened correctly.

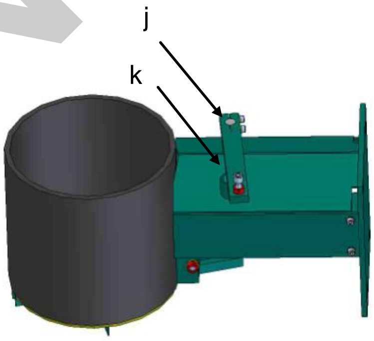
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Adjustment of Switch Bottom-closed



The **Switch Bottom closed**, mounted in the **Block Cylinder**, checks if the **Bottom** is closed properly. The **Switch Bottom Closed** is mounted approx. 2mm above the **Bottom** (i2).
For a good and reliable measuring when the **Bottom** is closed, there is an iron (so NO stainless steel) M6 countersink bolt placed right under the **Block Cylinder.** The other hole definitively must be kept open.
The **Switch Bottom closed** will be locked in place with a M6 inner hexagonal screw on the back of the **Block Cylinder.** This bolt must be tightened lightly or else the **Switch Bottom closed** will be damaged

Adjustment of the Arm Bottom



The upper side of the **Arm Bottom** is on the same level as the top of the **Axle Bottom** (j)
The side close to the **Cylinder** of the **Arm Bottom** must be placed in the middle of the **Chimney** on the **Roof** (k).

Note: Take notice that the **Take along bolt** touches the **Springstrip** without touching the bolts on the **Springstrip**.

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Checking of the electrical connections after installation.

The Densimeter in general will be delivered completely adjusted. Therefore it is possible to do a quick check on the connections after the Densimeter is put in place and al connections are made.

There are 4 signals that need to be checked.

- Analogue input
- Movement motor
- Detection bottom open
- Weighing Cylinder

All these checks can be done using the Operator Panel.

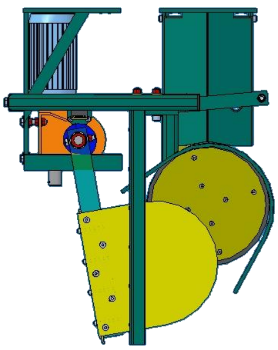
Analogue input

To determine if the analogue input is connected in the right way, switch the Operator Panel to screen Pic10 (settings arm) by pressing the following buttons starting from the main screen, **F2/fill** -> **F3/set** -> **F1/arm**.
Now press once on the button arrow down. On the top of the screen is now the text **Actual pos. Arm**, with a value between 0 and 4095 at the end of the line. (For a full explanation of the Operator Panel look at the manual **OP panel DENSIMETER**)

By moving the **Arm** by using the **Manual Control Motor Axle** the value behind **Actual pos. arm** will change. When the **Arm** moves in the direction to the **Cylinder** the value should increase. Moving the **Arm** in the direction to the **Loading Position** the value should decrease.

Is the value 4095 then there is no signal on the **Analogue input**.

Movement Arm



Move the **Arm** in the position as shown in picture on the side by using the **Manual Control Motor Axle**. (Or mirrored when used an other mounting setup). The value behind **Actual pos. arm** will now be 1600 which stands for 6,10 V dc measured on terminal 2 and 3 in the control cabinet (See appendix C: Connection diagram).

To determine the right electrical movements by the **Arm** you must place the **Densimeter** in manual mode.
Press from the main screen on the OP the following buttons:
F2/fill -> **F1/m/a**.
On the end of the 3rd line is shown the actual mode of the **Densimeter**. If shown **Man** the **Densimeter** is in manual mode, if

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shown **Auto** the **Densimeter** is in automatic mode. By pressing **F1** it is possible to toggle the mode.

Now that the **Densimeter** is in manual mode and there is checked that the safety switch near the motor is switched on it is possible to check the movement of the **Arm**.

Press in Pic 10 (settings Arm) on the button arrow down until the last line shows the text: **Unlo Load Go Copy**.

When now pressed 1 sec. on the button **F1/Unlo** the **Arm** must move in the direction of the **Mountingbase Cylinder**. Press **F2/Load** the **Arm** must move in the direction of the **Mountingbase Motor**. It is possible that a password will be asked.

Detection Bottom open

When the **Switch Bottom closed** is connected and the **Bottom** will be opened, a led lamp on the PLC in the cabinet (input **I**1.4) will go out and on the Operator Panel a led at button **K2** goes on.

The led on the Operator Panel will remain on for 2 sec. after the **Bottom** is closed.

Weighing Cylinder

When the loadcell is connected and a red led on the SIWAREX M (halfway on the PLC) is lit, the **Load cell** isn't connected well.

On the Operator Panel in the main screen behind the letter **C** is the actual weight in the **Cylinder** viewed. When the **Cylinder** is empty the value is between –0,500 and 0,500 and doesn't change.
When a known weight, heavier than 5 kg and less than 10 kg is placed in the **Cylinder** the value behind **C** must increase the same as the known weight. **I**s the value decreasing then the 2 wires connected to terminals 12 and 13 on the terminal strip in the control cabinet must be exchanged.
When the weight is taken out of the **Cylinder** the value behind **C** must become the same as it was before the weight was put in the **Cylinder**.

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Electrical Adjustments

After the Mechanical adjustments of the Densimeter are finished and all connections are checked, it's time to do the Electrical adjustment.

There are 6 types of settings.

Settings Frequency Converter
Settings Positions arm Shovel
Settings Cylinder
Settings Time
Settings Signals
Settings Communication

When all the parameters are filled in and the **Densimeter** works as desired, it's possible to save all parameters for back up.

From the main screen press the following buttons:
F3/data -> **F4/ saved set**.

Now press **F1/save** for saving all parameters.
When you press **F2/rest** all parameters will be restored as the saved parameters.
Press **F3/view para** for viewing the saved parameters

Settings of the Frequency Converter

Before we can adjust the Densimeter all cables must be connected and the frequency converter must have the right parameters.
For the parameters of the frequency converter look at appendix D: Parameters Frequency converter.

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Settings Positions Arm

For a good and reliable working **Densimeter** there are some important positions necessary.
These positions will be determined when the **Densimeter** is in the manual mode.
Changing the positions is possible in manual as well automatic mode.

Press from the main screen the following buttons:
F2/fill -> **F1/m/a**.
On the end of the 3rd line you see the actual mode of the **Densimeter**. If shown **Man** the **Densimeter** is in manual mode, if shown **Auto** the **Densimeter** is in automatic mode. By pressing **F1** it is possible for switching the operation mode.
When the **Densimeter** is put in the manual mode a led on button **K1** will go flashing.

After all parameters are set press in the screen **MAN/AUTO** on the button **F2/cycle**.
The **Densimeter** will then make 1 full strike.

Now that the **Densimeter** is put in the manual mode we go back 1 screen by pushing the **ESC-Button**. We go to the Pic 10 (settings Arm) by pressing the buttons **F3/set** -> **F1/arm**.

Use the arrow keys up and down for scrolling between the parameters.
The value on which the cursor is blinking can be changed.
For moving the **Arm** in the direction of the **Mountingbase Cylinder,** press **F1/Unlo**.
For moving the **Arm** in the direction of the **Mountingbase Motor,** press **F2/Load**.

With the button **F3/go** it's possible to send the **Arm** to the position where the cursor is blinking, unless the position is already reached or passed.

Note:

- Take notice that the **Arm** is a fast moving object. Therefore it is important that you don't press the buttons to rotate too long. If you do there is a chance of mechanical jamming.
  If the **Densimeter** will be become jammed you can release it by using the **Manual Control Motor Axle**. When you don't have a **Manual Control Motor Axle** un-tighten the **Arm Bottom** and use the button **F2/Load** for moving the **Arm** back in position. When re-tighten the **Arm Bottom** make sure that this is done the right way (see Adjustment **Arm Bottom**)

- Some positions will react differently when the **Arm** is loaded with heavy soil. It is therefore possible that the value for these positions must slightly be changed. The positions **Reversal Pos, Stop unloading Pos** and **Loading Pos** are the positions that react different and are allowed for changing while the **Densimeter** is in automatic mode.

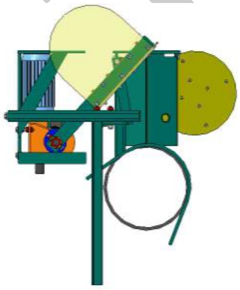
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The * underneath each described parameter down below have the meaning:

*   Free to change
**   Not allowed to change
***   Only allowed to change with permission of INADCO

Limit Unloading Position

**



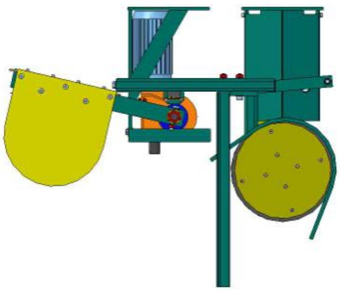
Position **Limit Unloading Position** is the position so that the **Bottom** cannot be opened further (mechanical end, **Bottom** touches the **Mountingbase Cylinder.**
When the value is too high the **Densimeter** can become jammed.

Manually place the **Densimeter** in this position and make sure that the cursor blinks behind the text **Limit Unloading**.
Now press **F4/copy** or type over the value as shown behind **Actual Pos. Arm** and confirm by pressing **Enter**.

Margin is the value 4095 minus the value of **Limit Unloading**. This value must be typed in by hand and also confirmed by pressing the **Enter**-button.

Limit Loading Position

**



Position ***Limit Loading Position*** is the position just before the **Arm** in **Loading Position** is mechanical jammed.
When the value is too low the **Densimeter** can become jammed.

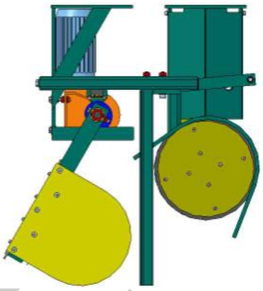
Manually place the **Densimeter** in this position and make sure that the cursor blinks behind the text **Limit Loading P**.
Now press **F4/copy** or type over the value as shown behind **Actual Pos. Arm** and confirm by pressing **Enter**.

Margin is the value at **Limit Loading P** + 50. Confirm by pressing **Enter**.

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Loading Position

*



The **Loading Position** is the position where the **Shovel** will be filled with the product to measure. It's important that the **Shovel** rotates far enough through the product flow when your product is inhomogeneous.

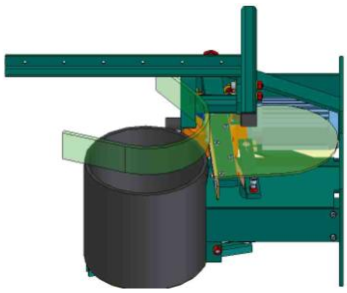
Manually place the **Shovel** in the product flow and make sure that the cursor blinks behind the text **Loading Pos**.
Take the value as shown behind **Actual Pos. Arm** and add 200 to it. Type the new value and confirm by pressing **Enter**.

When during production it turns out that the **Shovel** isn't rotating enough through the product flow decrease the value in steps of 50.

Margin is the value at **Limit Pos** + 100. Confirm by pressing **Enter**.

Reversal Position

***



The **Reversal Position** is the position where the **Shovel** starts to decelerate before switching the moving direction.

To determine this position you must first set the **CheckIncrease Pos**. *(See next page)*

When the **Check Increase Pos** is set decrease the value with 175 and type the value at **Reversal Pos**. Confirm by pressing **Enter**.

When it turns out that the **Shovel** touches the **Arm Bottom** decrease the value in steps of 10 so that the point of reversal the **Shovel** the **After scraper** is between the **Cylinder** and the **Arm Bottom**.
(When changing this position you must usually also change the **Check Increase Pos**.)

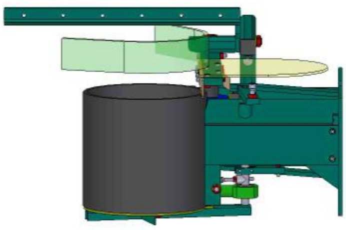
Margin is always 1000.

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CheckIncrease Position

***

The **CheckIncrease Position** is the position where there will be checked how much the weight in the **Cylinder** has increased when the **Shovel** has put the product in the **Cylinder**.



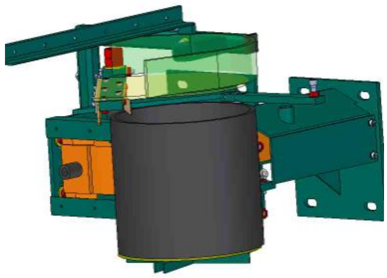
To determine this position place the **Shovel** so that the **After Scraper** is just above the edge of the **Cylinder**.
Make sure that the cursor blinks behind the text **CheckIncr Pos**. Now press **F4/copy** or type over the value as shown behind **Actual Pos. Arm** and confirm by pressing **Enter**.

Margin is always 1000.

CheckFull Position

***

The **Check Full Position** is the position where there will be checked how much weight in the **Cylinder** has increased after scraping of the **Cylinder**.



To determine this position place the **Shovel** in place so that the **After Scraper** is just in front of the **Cylinder**. (see Pic)
Make sure that the cursor blinks behind the text **Check Full Pos**. Now press **F4/copy** or type over the value as shown behind **Actual Pos. Arm** and confirm by pressing **Enter**.

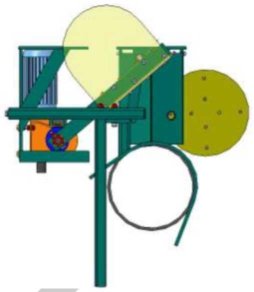
Margin is always 200.

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Stop Unloading Position

***

The **Stop Unloading Position** is the position where the **Shovel** starts to decelerate before switching the direction of the motion after the **Bottom** has been opened.



To determine this position take the value of **CheckIncrease Position** en increase this value with 400.Type the new value in behind **Stop Unload Pos**. Confirm by pressing **Enter**.

When it turns out that the **Bottom** will not be opened completely check for mechanical errors. If there are no mechanical errors increase the value with steps of 50 until the **Bottom** will be opened completely.
If the **Bottom** bounces against the **Mountingbase Cylinder** decrease the value in steps of 50.

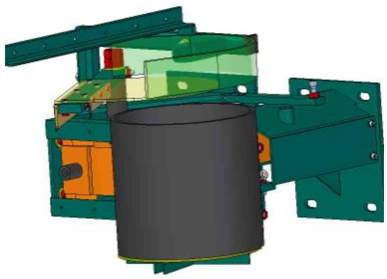
Note: It's possible that the value must be changed when the **Cylinder** is fully loaded with heavy or sticky soil, because this has more friction.

Margin is the value 4095 minus the value of the **Stop Unloading Position**. Confirm by pressing **Enter**.

Leakagedetection Position

***

The **Leakage detection Position** is the position where there will be checked how much weight is leaking from the **Cylinder** after scraping of the **Cylinder**, and if the **Bottom** is closed.



Make sure that the cursor blinks behind the text **Leak detection**.
Take the value as shown behind **CheckFull Pos**. and decrease with 100. Type the new value and confirm by pressing **Enter**.

Margin is always 200.

Start Unloading Position

***

The **Start Unloading Position** is the position where the **Cylinder** starts to been opened.



The value that must be entered here can be read in the field **Position switch in the flow**. Confirm by pressing **Enter**.

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Settings Cylinder

For setting up the parameters for the **Cylinder** go to the Pic 11(settings Cylinder) by Pressing the following buttons starting from the main screen.
F2/fill -> **F3/set** -> **F2/cyl**. Use the arrow keys up and down for scrolling between the parameters.

Filling Minimal Increase

*** *Default value = 0,25 (setting)*
Sets the minimum weight increment in the **Cylinder** for getting a valid measurement. Used for getting a full detection.

Full Counter

** *Default value = 2 (fixed value)*
Sets a value on how many times the **Densimeter** must have a full detection before the **Cylinder** will be emptied.

Material detection

*** *Default value = 0,35 kg (setting)*
Sets the minimum weight increment in the **Cylinder** for getting a valid measurement. Used for getting fill detection.

Slip detection arm

** *Default value = 10 (fixed value)*

Accretion detection

*** *Default value Warning = 0,5 kg (setting)*
Default value Blockage = 0,99 kg (setting)
Sets a weight when the **Densimeter** will generate an alarm if the **Densimeter** is not completely empty when it should be. At **Warning** only a message will be generated, but the Densimeter keeps on running. At **Blockage** the **Densimeter** will also stop measuring, and switch to manual mode.

Retries

** *Default value = 3 (fixed value)*

Leakage detection

** *Default value = 0,5 kg (fixed value)*

Volume Cyl

** *Default value = 20 L (read Only)*

Empty page

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Settings Delays

For setting up the delay parameters for the **Densimeter** go to the Pic 17(settings timers) by pressing the following buttons starting from the main screen.
F2/fill -> **F3/set** -> **F3/time**.
Use the arrow keys up and down for scrolling between the parameters.

Unloading Cylinder

*** *Default value = 2 sec.*
Sets the time necessary by the **Densimeter** for getting completely empty.

Closing Cylinder

*** *Default value = 2 sec.*
Sets the time necessary by the **Densimeter** for letting stay the **Cylinder** opened.

Start-delay

* *Default value = 2 sec.*
Sets the time used for a delay of starting the **Densimeter** between getting the start-signal en actual starting measuring.

Stop-delay

* *Default value = 2 sec.*
Sets the time used for letting the **Densimeter** measure even after the start-signal was removed.

Pause-delay

* *Default value = 0 sec.*
Sets the time used for get a delay to place the **Densimeter** in pause. The sample taking will stop. Only applied when terminal 8 (= **I**1.3) is connected in the cabinet. (See appendix C: Connection Diagram)

Restart-delay

* *Default value = 0 sec*
Sets the time used for get a delay between removing Pause-signal and let the **Densimeter** measure again. Only applied when terminal 8 (= **I**1.3) is connected in the cabinet. (See appendix C: Connection Diagram)

Running Delay

* *Default value = not used*

Refresh Comm.

** *Default value = 1 +0,5 sec*
Sets the time used for refreshing data getting from a weighing belt or weighing bridge.

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Motion Cyl PLC

** *Default value = 0,6 (fixed value)*

Motion Cyl Siwarex

** *Default value = (read only)*

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Settings Signals

For setting up the signal parameters for the **Densimeter** go to the Pic 16(settings Analogue input) by pressing the following buttons starting from the main screen.
F2/fill -> **F3/set** -> **F4/sign**.
Use the arrow keys up and down for scrolling between the parameters.

Input Vav Cyl

** *Default value = 1 (fixed value)*

Input Spike Cyl

** *Default value = 1 (fixed value)*

Filter AI-Cyl

** *Default value = 2 (fixed value)*

Input Vav arm

** *Default value = 1 (fixed value)*

Input Spike arm

** *Default value = 1 (fixed value)*

Motion range Cyl PLC

** *Default value = 0,4 (fixed value)*

Settings Communication

For setting up the communication for the **Densimeter** go to the Pic 22(Communication) by pressing the following buttons starting from the main screen.
F3/data -> **F1/com**.
Use **F1/com in** for setting in incoming communication.
Use **F2/com out** for setting in outgoing communication.

Incoming (Cin)

** *Default value = Off*

The state of this parameter depends on if there is communication necessary between a weighing belt or a weighing bridge. Use **F3/com on** for putting the communication *ON* and use **F4/com off** for putting the communication *OFF*.

Outgoing (Cout)

** *Default value = Off*

The state of this parameter depends on if there is outgoing communication necessary between for e.g. a computer or a printer. Use **F3/com on** for putting the communication *ON* and use **F4/com off** for putting the communication *OFF*.

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Calibrating the Densimeter

When using the **Densimeter** for the first time it needs to be calibrated.
Go to the screen Calibrating (Pic 19) by pressing in the main screen on **F1/cal**.
Behind the text **Cylinder** stands the actual weight in the **Cylinder** at that moment.
When this value isn't 0,000 kg press **F1/zero** for tare the **Cylinder** after you made sure that the **Cylinder** is empty and clean**.**

Next press on the button **F2/cal** to go to the calibration screen.

On the first line you see the actual weight of the **Densimeter**.
On the second line you type the weight which you are using for the calibration. This weight must be between 5kg and 10 kg.

When the **Cylinder** is empty and clean and the actual weight is 0,000 kg press on the button **F1/empty**.
Wait for 20 seconds and put the calibration weight in the **Cylinder**.
Now press on the button **F2/cal**. The Operator Panel will go to the main screen where you can see behind **C** the weight of your calibration weight. When you take the calibration weight out of the **Cylinder** the value weight will become approx. zero.
Place and take out the calibration weight a few times from the **Cylinder** for checking consistency of weighing.

When there is a different weight every time you place and take out the calibration weight from the **Cylinder** there is somewhere mechanical jamming between the weighing parts of the **Densimeter** and the fixed parts of the **Densimeter**.

After the calibration en zeroing the actual weight of an empty **Densimeter** is between –0,005 kg and 0,005 kg.

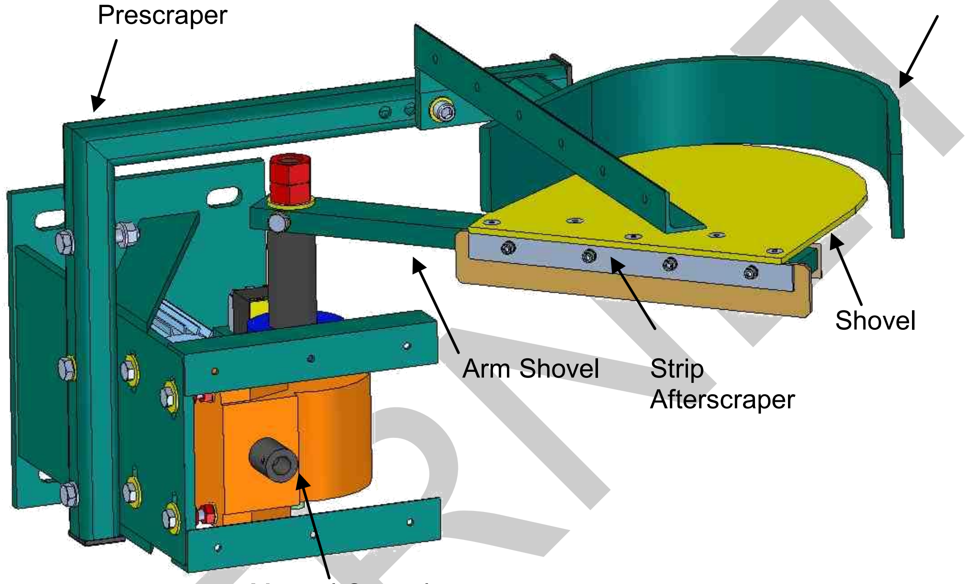
Periodically Checking The Densimeter

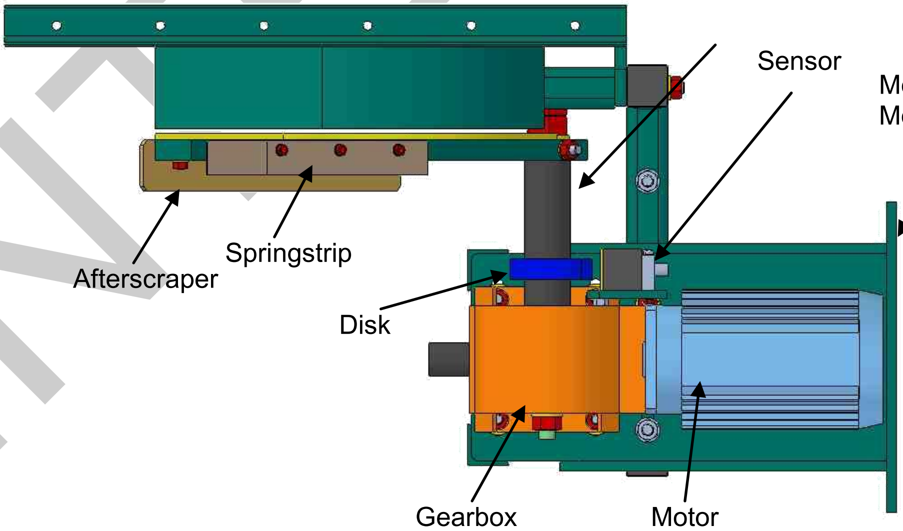
Although the **Densimeter** doesn't need much attention it's still recommended to do a once per week checking to keep good en reliable measurements and results.

To do this make the **Densimeter** clean and check if the weighing works correct by Putting an object for which you know the weight into the **Cylinder** and check if the actual weight of the **Cylinder** is increased as much as the weight you used. When you remove the object the actual weight must be the same as before.
It's possible that the actual weight is slightly changed.

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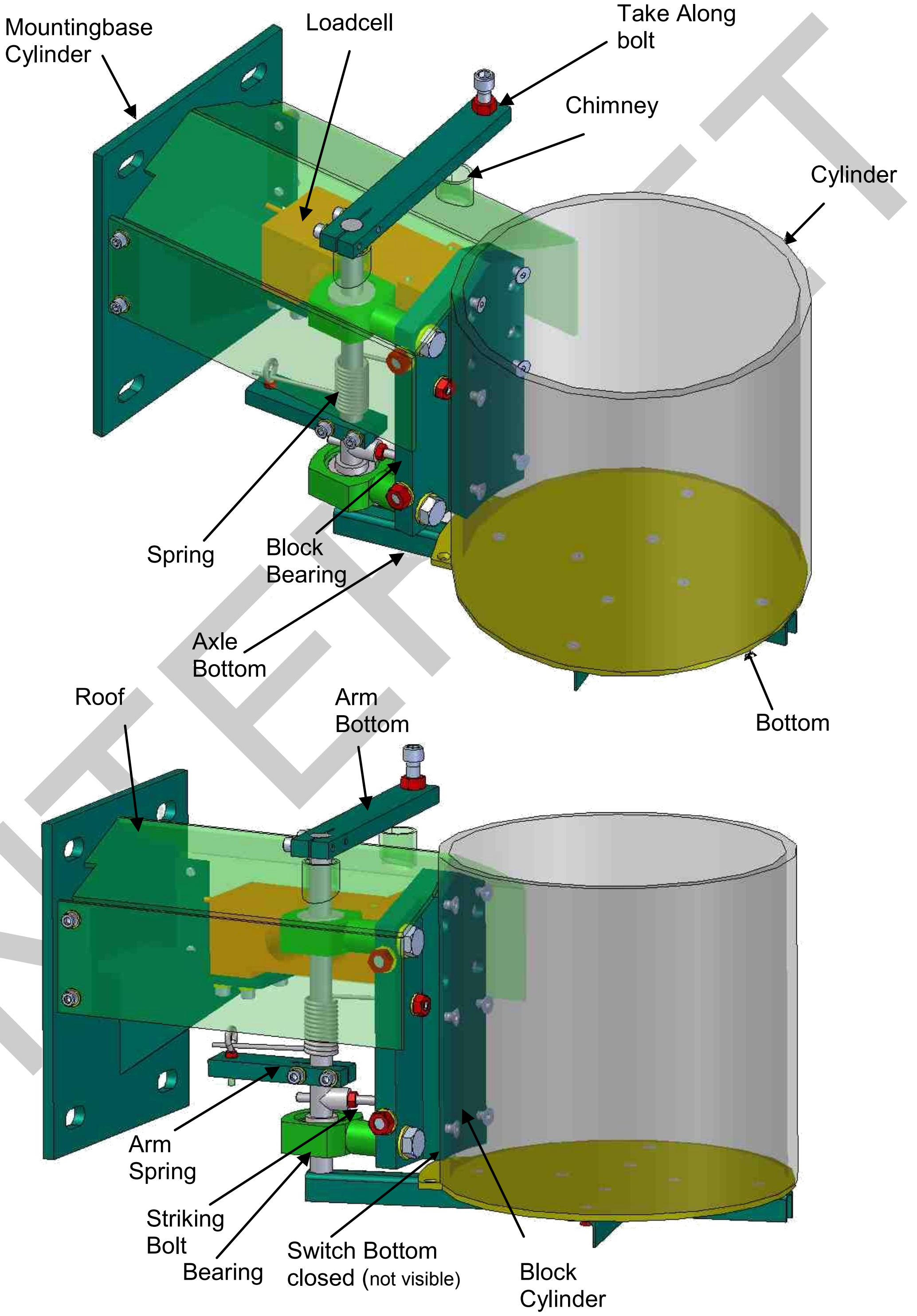
Appendix A: Motor-parts





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Appendix B: Cylinder-parts



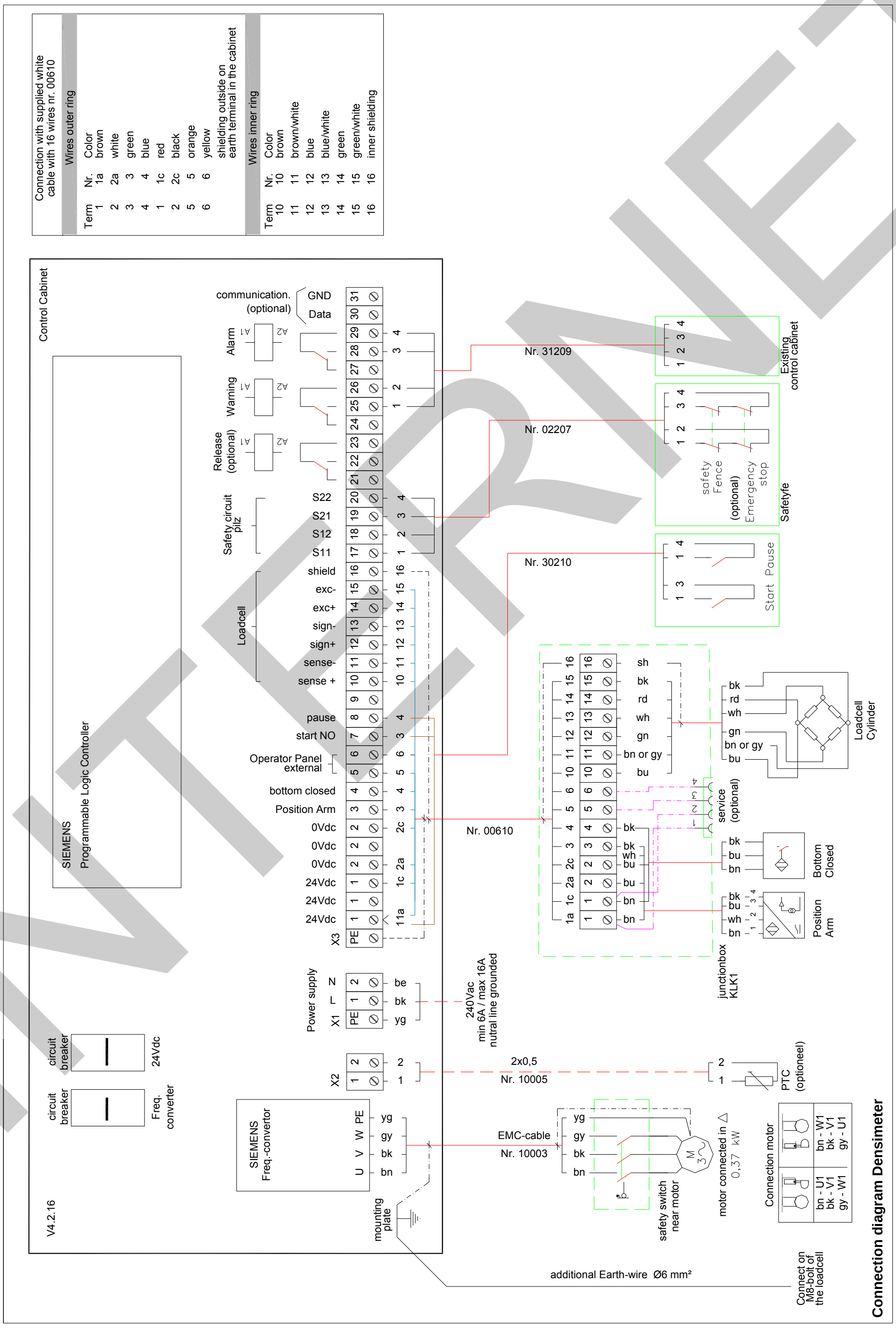
Text printed Bold and in Italics, refer to functions on the Operator Panel.
Bold printed words refer to names used in drawings Appendix A and B.
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Appendix C: Drawings

Connection diagram

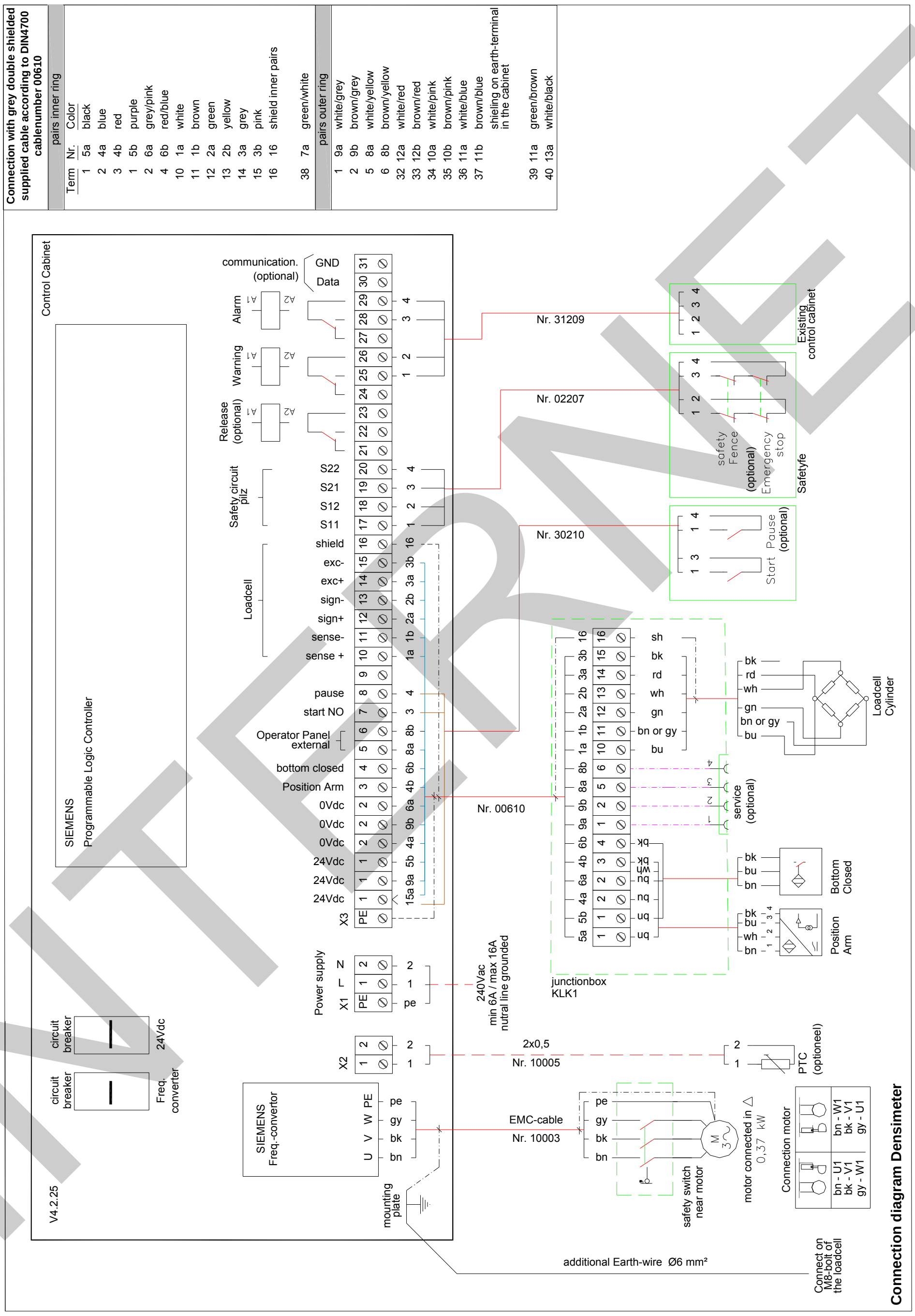
<u>Standard v4.2.16</u>



Text printed Bold and in Italics, refer to functions on the Operator Panel.
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Standard v4.2.25

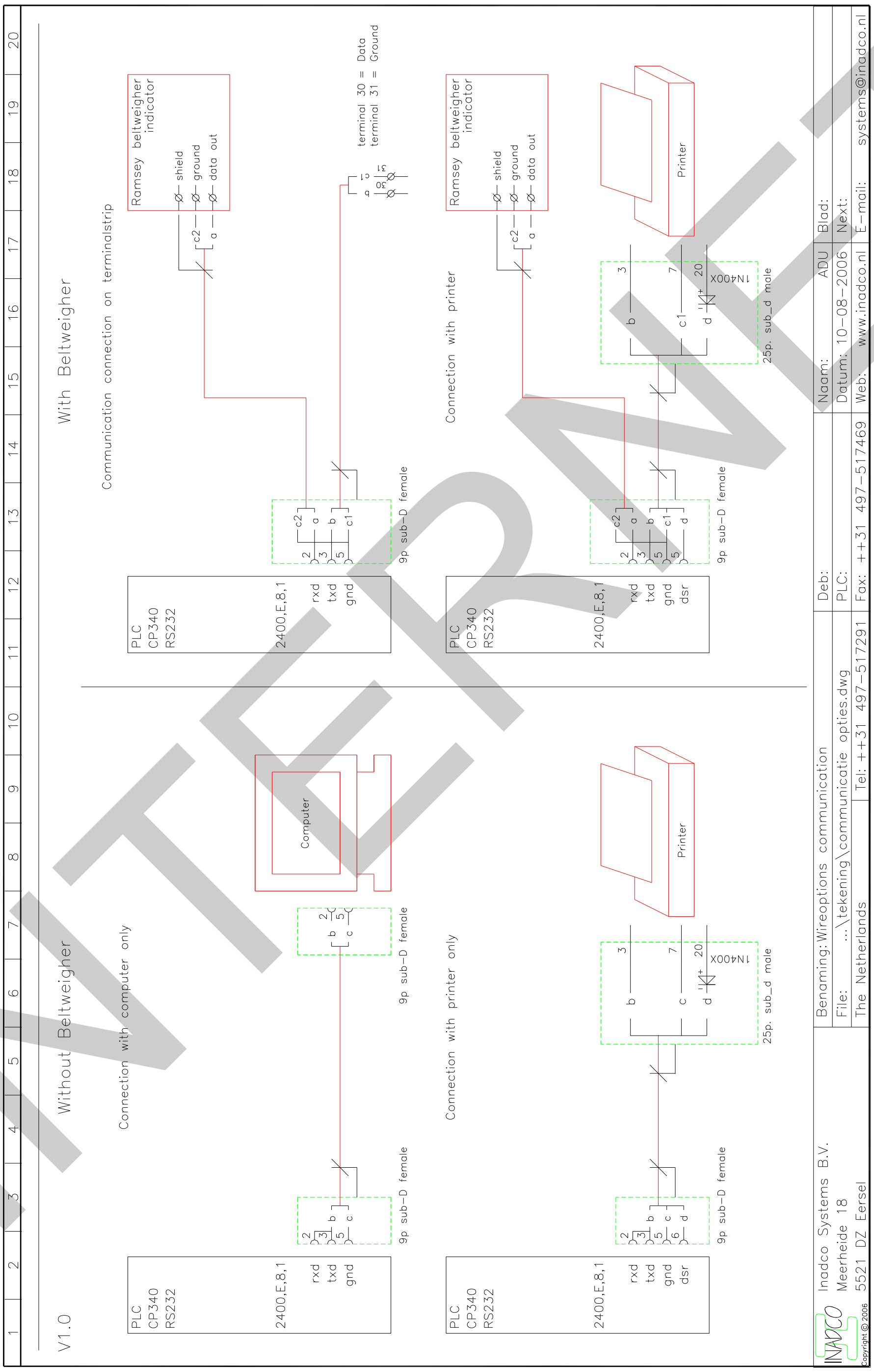


Text printed Bold and in Italics, refer to functions on the Operator Panel.
Bold printed words refer to names used in drawings Appendix A and B.
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Option: External communication

Version: v1.0



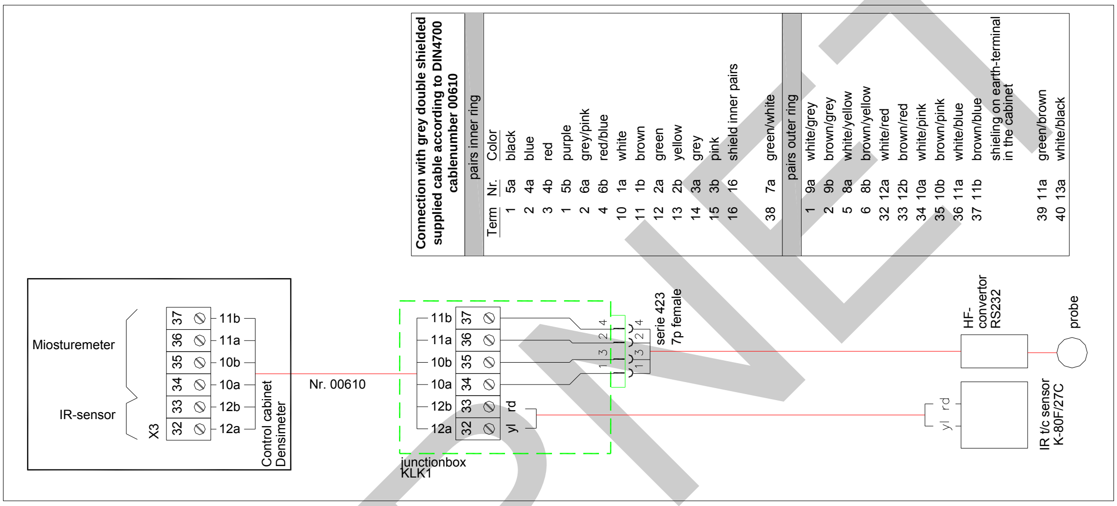
Text printed Bold and in Italics, refer to functions on the Operator Panel.
Bold printed words refer to names used in drawings Appendix A and B.
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Option: Moisture-measurement

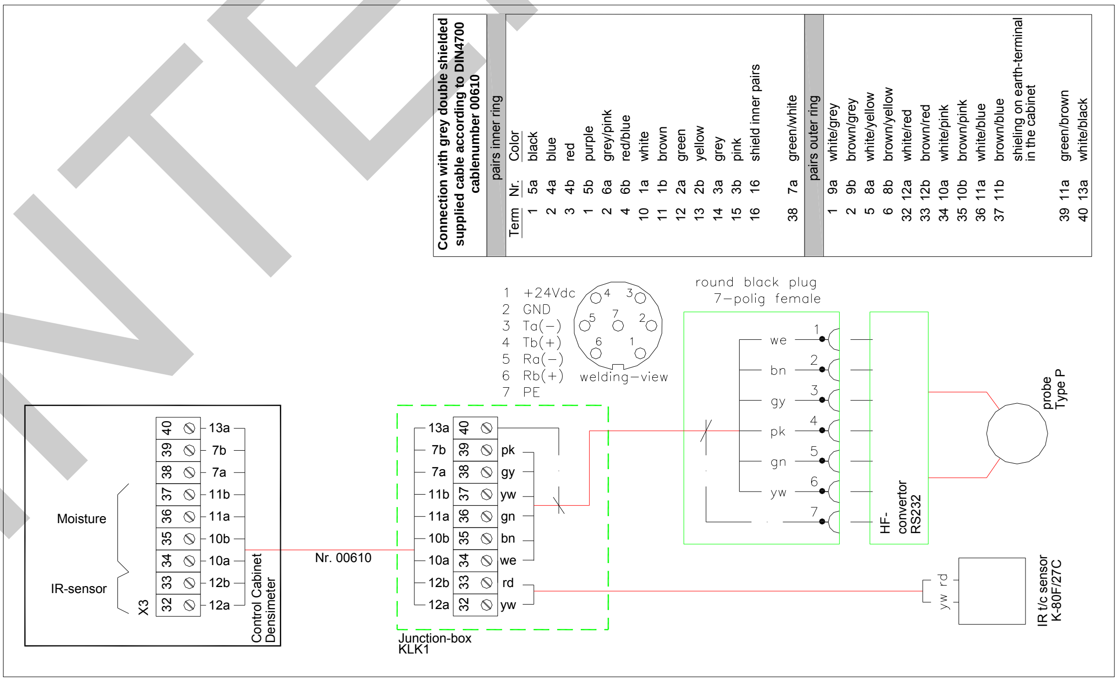
Sensor Type I

Version: v1.0



Sensor Type P

Version: v1.0



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Appendix D: Parameters Frequency Converter

These parameters may not be changed.

Siemens Micromaster 410 without PTC temperature-sensor in motor

Version: V410.1.1

Parameter	Value	Default	Parameter	Value	Default	Parameter	Value	Default
P0003	3	1	P0758		0	P1210	4	1
P0004		0	P0759		10	P1215		0
P0005		21	P0760		100	P1216		1
P0010		0	P0761		0	P1217		1
P0100		0	P0810		0	P1232		100
P0201		0	P0927		15	P1233		0
P0210		230	P0970		0	P1236	100	0
P0290		2	P0971		0	P1240		1
P0300		1	P1000	1	2	P1300		0
P0304		230	P1001		0	P1310		50
P0305		3.25	P1002		5	P1311		0
P0307		0.75	P1003		10	P1312		0
P0308		0	P1031		0	P1316		20
P0309		0	P1032		1	P1320		0
P0310		50	P1040	30	5	P1321		0
P0311		0	P1058		5	P1322		0
P0335		0	P1059		5	P1323		0
P0340		0	P1060		10	P1324		0
P0350	15	4	P1061		10	P1325		0
P0610		2	P1070		755:0	P1333		10
P0611		100	P1075		0	P1335		0
P0614		100	P1080	0	0	P1340		0
P0640	147	150	P1082	50	50	P1800	16	4
P0700	2	2	P1091		0	P2000		50
P0701	1	1	P1120	0.5	10	P2009[2]		0
P0702	12	12	P1121	0.3	10	P2010[2]		6
P0703	9	9	P1130	0.3	0	P2011[2]		0
P0704		0	P1131	0.3	0	P2012[2]		2
			P1132	0.3	0	P2013[2]		127
P0719(2)		0	P1133	0.3	0	P2014[2]		0
P0724			P1134		0	P2016[2]		52:0
P0731		52:3	P1135		5	P2019[4]		52:0
P0748		0	P1200		0	P2167		1
P0753		3	P1202		100	P3900		0
P0757		0	P1203		100			

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Siemens Micromaster 410 with PTC temperature-sensor in motor

Version: V410.1.1

Parameter	Value	Default	Parameter	Value	Default	Parameter	Value	Default
P0003	3	1	P0758		0	P1210	4	1
P0004		0	P0759		10	P1215		0
P0005		21	P0760		100	P1216		1
P0010		0	P0761		0	P1217		1
P0100		0	P0810		0	P1232		100
P0201		0	P0927		15	P1233		0
P0210		230	P0970		0	P1236	100	0
P0290		2	P0971		0	P1240		1
P0300		1	P1000	1	2	P1300		0
P0304		230	P1001		0	P1310		50
P0305		3.25	P1002		5	P1311		0
P0307		0.75	P1003		10	P1312		0
P0308		0	P1031		0	P1316		20
P0309		0	P1032		1	P1320		0
P0310		50	P1040	30	5	P1321		0
P0311		0	P1058		5	P1322		0
P0335		0	P1059		5	P1323		0
P0340		0	P1060		10	P1324		0
P0350	15	4	P1061		10	P1325		0
P0610		2	P1070		755:0	P1333		10
P0611		100	P1075		0	P1335		0
P0614		100	P1080	0	0	P1340		0
P0640	147	150	P1082	50	50	P1800	16	4
P0700	2	2	P1091		0	P2000		50
P0701	1	1	P1120	0.5	10	P2009[2]		0
P0702	12	12	P1121	0.3	10	P2010[2]		6
P0703	29	9	P1130	0.3	0	P2011[2]		0
P0704	9	0	P1131	0.3	0	P2012[2]		2
			P1132	0.3	0	P2013[2]		127
P0719(2)		0	P1133	0.3	0	P2014[2]		0
P0724			P1134		0	P2016[2]		52:0
P0731		52:3	P1135		5	P2019[4]		52:0
P0748		0	P1200		0	P2167		1
P0753		3	P1202		100	P3900		0
P0757		0	P1203		100			

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Siemens Micromaster 310 (vector, midimaster)

Version: V310.1.1

Parameter	Value	Default
P000		-
P001		0
P002	0,5	10
P003	0,3	10
P004	0,3	0
P005	30	5
P006		0
P007	0	1
P009	3	0
P010		1
P011		0
P012		0
P013		50
P014		0
P015		0
P016		0
P017		1
P018		0
P019		2
P021		0
P022		50
P023		0
P024		0
P025		0
P026		0
P027		0
P028		0
P029		0
P031		5
P032		5
P033		10
P034		10
P040		0
P041		5
P042		10
P043		15
P044		20
P045		0
P046		25
P047		30
P048		35
P049		40
P050		0
P051		1
P052		2
P053	10	6
P054		6
P055		6
P056		0
P057		1
P061		6

Parameter	Value	Default
P062	0	8
P063		1
P064		1
P065		1
P066	1	0
P069		1
P070		0
P071		0
P072		250
P073		0
P074	1	3
P075		0
P076	nvt	0/4
P077	2	1
P078		100
P079		0
P080		***
P081	50	50
P082	1375	***
P083	2	***
P084	230	***
P085	0,37	***
P086	147	150
P087		0
P088		0
P089	15	***
P091		0
P092		6
P093		0
P094		50
P095		0
P099		0
P101		0
P111	0,37	***
P112	5	***
P113	2	***
P121		1
P122		1
P123		1
P124		1
P125		1
P128		120
P131		-
P132		-
P133		-
P134		-
P135		-
P137		-
P138		-
P139		-

Parameter	Value	Default
P140		-
P141		-
P142		-
P143		-
P186	nvt	200
P201		0
P202		1
P203		0
P204		0
P205		1
P206		0
P207		100
P208		0
P210		-
P211		0
P212		100
P220		0
P321		0
P322		50
P323		0
P356		6
P386		1
P387		1
P700		-
P701		-
P702		-
P720		0
P721		-
P722		0
P723		-
P724		0
P725		-
P726		0
P880		-
P910		0
P918		-
P922		-
P923		0
P927		-
P928		-
P930		-
P931		-
P944		0
P947		-
P958		-
P963		-
P967		-
P968		-
P970		-
P971		1

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Siemens Sinamics G110

Version : V110.1.1

Parameter	Value	Default
P0003	3	1
P0004		0
P0005		21
P0010		0
P0014[3]		0
P0100		0
P0201		0
P0290		0
P0295		0
P0304		230
P0305		3.25
P0307	0.75	0.12
P0308		0
P0309		0
P0310		50
P0311		0
P0335		0
P0340		0
P0346		1
P0347		1
P0350	15	4
P0610		2
P0611		100
P0614		110
P0640	147	150
P0700	2	2
P0701	1	1
P0702	12	12
P0703	9	9
P0704*		0
P0704**	29	0
P0719(2)		0
P0724		3
P0731	5	5
P0748		0
P0753		3
P0757		0

Parameter	Value	Default
P0758		0
P0759		10
P0760		100
P0761		0
P0802		0
P0803		0
P0810		0
P0927		15
P0970		0
P0971		0
P1000	1	2
P1001		0
P1002		5
P1003		10
P1031		0
P1032		1
P1040	30	5
P1058		5
P1060		10
P1080	0	0
P1082	50	50
P1091		0
P1110		0
P1120	0.5	10
P1121	0.3	10
P1130	0.3	0
P1134		0
P1135		5
P1200		0
P1202		100
P1203		100
P1210	4	1
P1215		0
P1216		1
P1217		1
P1232		100
P1233		0

Parameter	Value	Default
P1240		1
P1300		0
P1310		50
P1311		0
P1312		0
P1316		20
P1320		0
P1321		0
P1322		0
P1323		0
P1324		0
P1325		0
P1335		0
P1340		0
P1800	16	8
P2000		50
P2010		6
P2011		0
P2012		2
P2013		127
P2014		0
P2016		0
P2167		1
P3900		0

P0704* = without the use of a PTC
P0704** = with the use of a PTC

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Appendix E: Parameters Densimeter

Version: V2.0

Green cells * : Free for changing
Yellow cells ** : No changing allowed
Blue cells *** : May only be changed after consult with INADCO

Arm

Parameter	Value	Default
Limit Unloading **	3500	3500
Margin		595
Limit Loading Pos **		400
Margin		450
Loading Pos *		500
Margin		600
Reversal Pos ***		2675
Margin		1000
CheckIncrease Pos ***		2850
Margin		1000

Parameter	Value	Default
Check Full Pos ***		2000
Margin		200
StartUnlo Pos ***		3043
Stop Unload Pos ***		3250
Margin		845
Leak detection ***		1900
Margin		200
Pos. Switch in the flow		-
Correction Cooling **		1,01
Correction Heating **		0,99

Cylinder

Parameter	Value	Default
Cylinder full max Incr		0,250
Full counter		2
Material filling min Incr.		0,350
Skid-detection min		10

Parameter	Value	Default
Accretion detection		0,500
Accretion detection		0,999
Retries		3
Leak detection allowed		0,5

Time

Parameter	Value	Default
Emptying cylinder		2
Closing cylinder		2
Stand-still		2
Start delay		2
Stop delay		2
Pause delay		0

Parameter	Value	Default
Restart delay		0
Stop delay Belt		-
Refresh communication		1+0,5
Motion time cylinder PLC		0,5
Motion time cylinder Siwarex		-

Analogue

Parameter	Value	Default
Vav Analogue-input		1
Spike Analogue-input		1
Filter AI-cylinder		2
Raw AI-cylinder		-

Parameter	Value	Default
Vav Analogue input Arm		1
Spike Analogue inp Arm		1
Motion range Cyl PLC		0,4
Motion range Cyl Siwarex		-

Communication

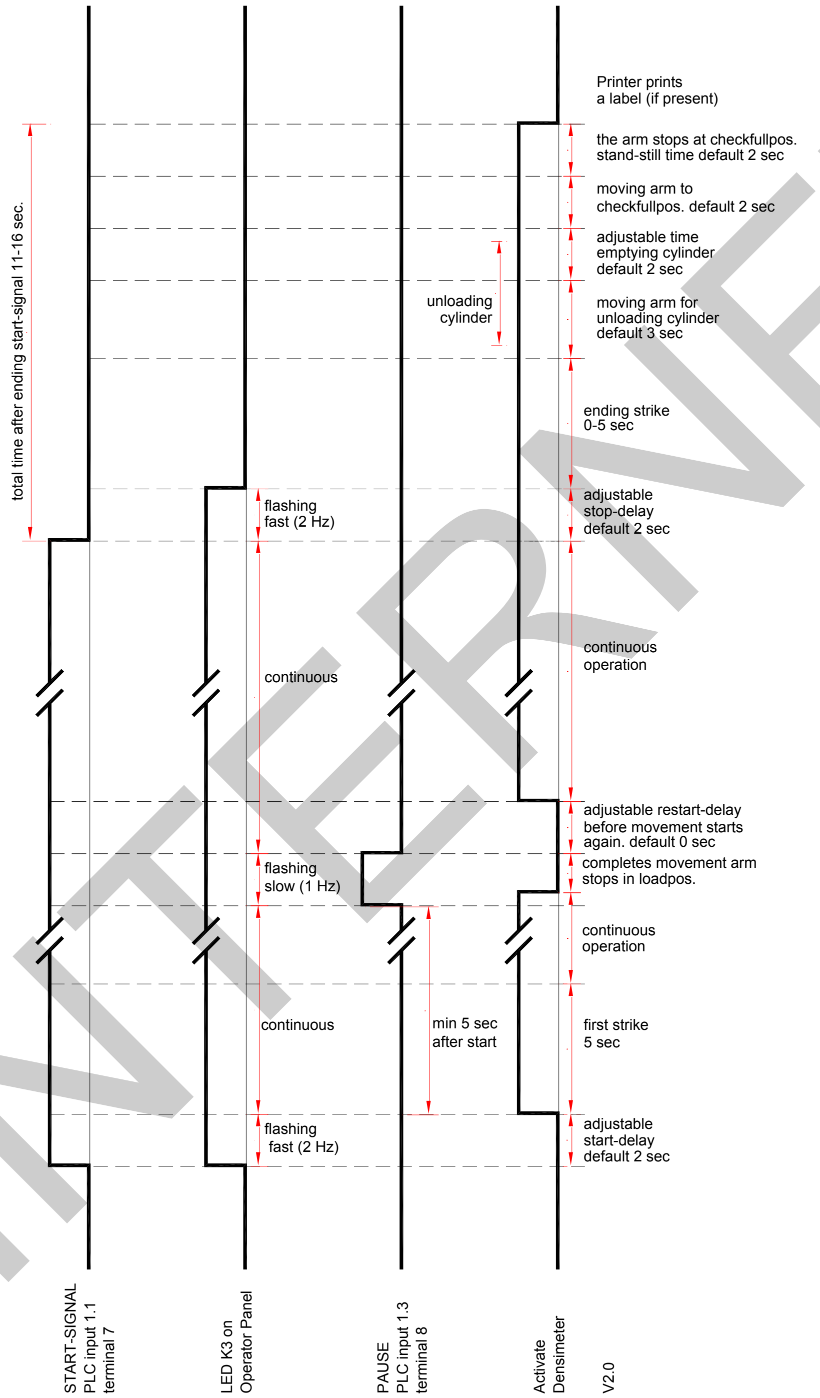
Parameter	Value	Default
Communication IN		off

Parameter	Value	Default
Communication Out		off

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Appendix F: Timing diagram

Version: V2



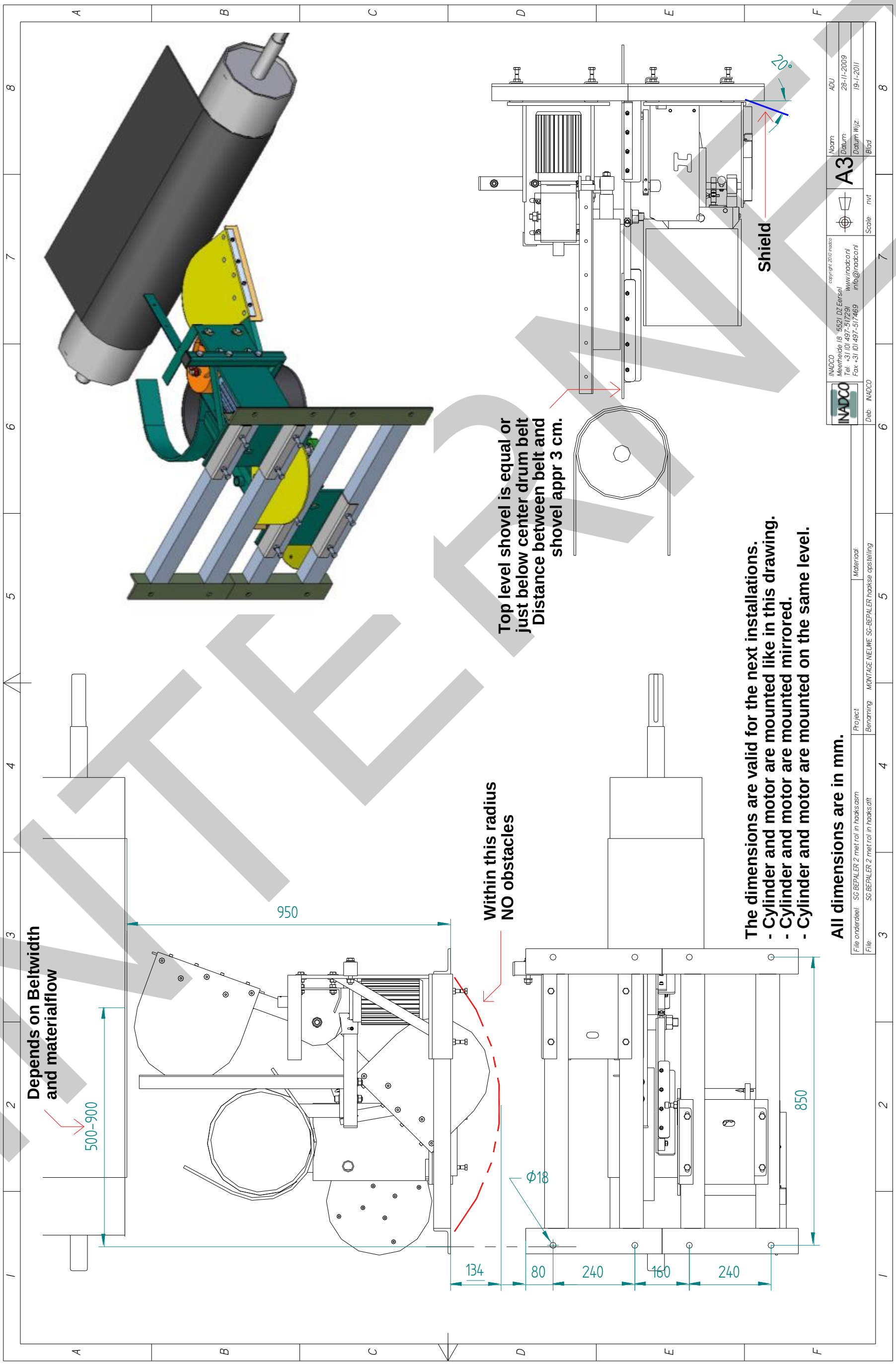
Text printed Bold and in Italics, refer to functions on the Operator Panel.
Bold printed words refer to names used in drawings Appendix A and B.

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Appendix G: Installation

Situation: Corner overflow

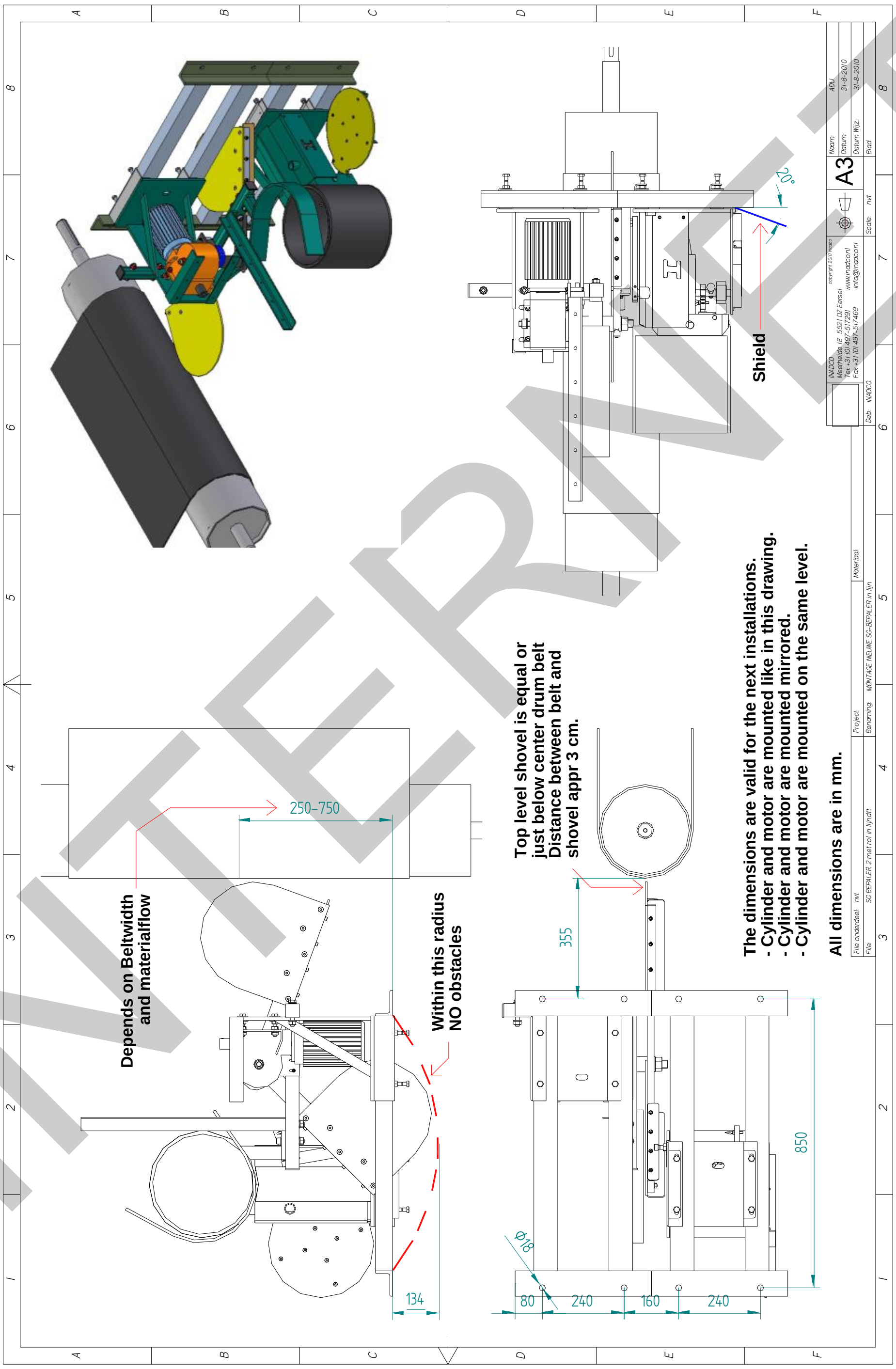
Version: v2.0



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Situation: Overflow In Line

Version: v2.0



Text printed Bold and in Italics, refer to functions on the Operator Panel.
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Appendix Z: Declaration of Incorporation

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